



Adaptations to climate-mediated selective pressures in humans

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Abstract:

Humans inhabit a remarkably diverse range of environments, and adaptation through natural selection has likely played a central role in the capacity to survive and thrive in extreme climates. Unlike numerous studies that used only population genetic data to search for evidence of selection, here we scan the human genome for selection signals by identifying the SNPs with the strongest correlations between allele frequencies and climate across 61 worldwide populations. We find a striking enrichment of genic and nonsynonymous SNPs relative to non-genic SNPs among those that are strongly correlated with these climate variables. Among the most extreme signals, several overlap with those from GWAS, including SNPs associated with pigmentation and autoimmune diseases. Further, we find an enrichment of strong signals in gene sets related to UV radiation, infection and immunity, and cancer. Our results imply that adaptations to climate shaped the spatial distribution of variation in humans.

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3080864>

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Meteorological Factors, Precipitation, Solar Radiation, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

General Geographical Feature

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Impact:

specification of health effect or disease related to climate change exposure

Climate Change and Human Health Literature Portal

Cancer, Cardiovascular Effect, Infectious Disease, Other Health Impact

Other Health Impact: genetic effects;immune and autoimmune disease

Resource Type: 

format or standard characteristic of resource

Research Article

Resilience: 

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale: 

time period studied

Time Scale Unspecified